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<110> Chory, Joanne
      Jianming, Li
      Salk Institute for Biological Studies

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                                        Met Lys Thr Phe Ser Ser
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ttc ttt ctc tct gta aca act ctc ttc ttc ttc tcc ttc ttt tct ctt   162
Phe Phe Leu Ser Val Thr Thr Leu Phe Phe Phe Ser Phe Phe Ser Leu
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tca ttt caa gct tca cca tct cag tct tta tac aga gaa atc cat cag   210
Ser Phe Gln Ala Ser Pro Ser Gln Ser Leu Tyr Arg Glu Ile His Gln
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ctt ata agc ttc aaa gac gtt ctt cct gac aag aat ctt ctc cca gac   258
Leu Ile Ser Phe Lys Asp Val Leu Pro Asp Lys Asn Leu Leu Pro Asp
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tgg tct tcc aac aaa aac ccg tgt act ttc gat ggc gtt act tgc aga   306
Trp Ser Ser Asn Lys Asn Pro Cys Thr Phe Asp Gly Val Thr Cys Arg
55   60   65   70

gac gac aaa gtt act tcg att gat ctc agc tcc aag cct ctc aac gtc   354
Asp Asp Lys Val Thr Ser Ile Asp Leu Ser Ser Lys Pro Leu Asn Val
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gga ttc agt gcc gtg tcc tcg tct ctc ctg tct ctc acc gga tta gag   402

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Ser Leu Phe Leu Ser Asn Ser His Ile Asn Gly Ser Val Ser Gly Phe
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aag tgc tct gct tct tta acc agc ttg gat cta tct aga aac tct ctt        498
Lys Cys Ser Ala Ser Leu Thr Ser Leu Asp Leu Ser Arg Asn Ser Leu
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tcg ggt cct gta acg act cta aca agc ctt ggt tct tgc tcc ggt ctg        546
Ser Gly Pro Val Thr Thr Leu Thr Ser Leu Gly Ser Cys Ser Gly Leu
135                 140                 145                 150

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Lys Phe Leu Asn Val Ser Ser Asn Thr Leu Asp Phe Pro Gly Lys Val
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Ser Gly Gly Leu Lys Leu Asn Ser Leu Glu Val Leu Asp Leu Ser Ala
                170                 175                 180

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Asn Ser Ile Ser Gly Ala Asn Val Val Gly Trp Val Leu Ser Asp Gly
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tgt gga gag ttg aaa cat tta gcg att agc gga aac aaa atc agt gga        738
Cys Gly Glu Leu Lys His Leu Ala Ile Ser Gly Asn Lys Ile Ser Gly
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gac gtc gat gtt tct cgc tgc gtg aat ctc gag ttt ctc gat gtt tcc        786
Asp Val Asp Val Ser Arg Cys Val Asn Leu Glu Phe Leu Asp Val Ser
215                 220                 225                 230

tcc aac aat ttc tcc act ggg att cct ttc ctc gga gat tgc tct gct        834
Ser Asn Asn Phe Ser Thr Gly Ile Pro Phe Leu Gly Asp Cys Ser Ala
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ctg caa cat ctt gac atc tcc ggg aac aaa tta tcc ggc gat ttc tcc        882
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cgt gct atc tct act tgc aca gag ctc aag ttg ttg aac atc tct agt        930
Arg Ala Ile Ser Thr Cys Thr Glu Leu Lys Leu Leu Asn Ile Ser Ser
            265                 270                 275

aac caa ttc gtc gga cca atc cct ccg cta ccg ctt aaa agt ctc caa        978
Asn Gln Phe Val Gly Pro Ile Pro Pro Leu Pro Leu Lys Ser Leu Gln
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tac ctc tct ctg gcc gag aac aaa ttc acc ggc gag atc cct gac ttt       1026
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cat ttc tac ggt gcg gtt cct cca ttc ttc ggt tca tgt tct ctt ctc    1122
His Phe Tyr Gly Ala Val Pro Pro Phe Phe Gly Ser Cys Ser Leu Leu
            330             335             340

gaa tca ctc gcg ttg tcg agt aac aac ttc tct ggc gag tta ccg atg    1170
Glu Ser Leu Ala Leu Ser Ser Asn Asn Phe Ser Gly Glu Leu Pro Met
            345             350             355

gat acg ttg ttg aag atg aga gga ctc aaa gta ctt gat ctg tct ttc    1218
Asp Thr Leu Leu Lys Met Arg Gly Leu Lys Val Leu Asp Leu Ser Phe
            360             365             370

aac gag ttt tcc ggc gaa tta ccg gaa tct ctg acg aat cta tcc gct    1266
Asn Glu Phe Ser Gly Glu Leu Pro Glu Ser Leu Thr Asn Leu Ser Ala
375             380             385             390

tcg ttg cta acg tta gat ctc agc tcc aac aat ttc tcc ggt ccg att    1314
Ser Leu Leu Thr Leu Asp Leu Ser Ser Asn Asn Phe Ser Gly Pro Ile
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ctc cca aat ctc tgc cag aac cct aaa aac act ctg cag gag ctt tac    1362
Leu Pro Asn Leu Cys Gln Asn Pro Lys Asn Thr Leu Gln Glu Leu Tyr
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Leu Gln Asn Asn Gly Phe Thr Gly Lys Ile Pro Pro Thr Leu Ser Asn
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tgt tct gag ctg gtt tcg ctt cac ttg agc ttc aat tac ctc tcc ggg    1458
Cys Ser Glu Leu Val Ser Leu His Leu Ser Phe Asn Tyr Leu Ser Gly
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aca atc cct tcg agc tta ggc tct cta tcg aag ctt cga gat ctg aaa    1506
Thr Ile Pro Ser Ser Leu Gly Ser Leu Ser Lys Leu Arg Asp Leu Lys
455             460             465             470

cta tgg ctg aat atg tta gaa gga gag atc cct cag gag ctc atg tat    1554
Leu Trp Leu Asn Met Leu Glu Gly Glu Ile Pro Gln Glu Leu Met Tyr
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gtc aag acc tta gag act ctg atc ctc gac ttc aac gat tta acc ggt    1602
Val Lys Thr Leu Glu Thr Leu Ile Leu Asp Phe Asn Asp Leu Thr Gly
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aac att ccg gat gag ctc ggc gac tgc aga agc tta atc tgg ctt gat       1794
Asn Ile Pro Asp Glu Leu Gly Asp Cys Arg Ser Leu Ile Trp Leu Asp
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ctc aac acc aat ctc ttc aat gga acg att ccg gcg gcg atg ttt aaa       1842
Leu Asn Thr Asn Leu Phe Asn Gly Thr Ile Pro Ala Ala Met Phe Lys
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caa tcc ggg aaa atc gct gcc aat ttc atc gcc ggt aag agg tac gtt       1890
Gln Ser Gly Lys Ile Ala Ala Asn Phe Ile Ala Gly Lys Arg Tyr Val
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tat atc aaa aac gat ggg atg aag aaa gag tgt cat gga gct ggt aat       1938
Tyr Ile Lys Asn Asp Gly Met Lys Lys Glu Cys His Gly Ala Gly Asn
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acg agg aac cct tgt aat atc act agc aga gtc tat gga ggt cac act       2034
Thr Arg Asn Pro Cys Asn Ile Thr Ser Arg Val Tyr Gly Gly His Thr
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tcg ccg acg ttt gat aac aat ggt tcg atg atg ttt ctg gac atg tct       2082
Ser Pro Thr Phe Asp Asn Asn Gly Ser Met Met Phe Leu Asp Met Ser
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Tyr Asn Met Leu Ser Gly Tyr Ile Pro Lys Glu Ile Gly Ser Met Pro
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tat ctg ttt att ctc aat ttg ggt cat aac gat atc tct ggt tcg att       2178
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cct gat gag gta ggt gat cta aga ggt tta aac att ctt gat ctt tca       2226
Pro Asp Glu Val Gly Asp Leu Arg Gly Leu Asn Ile Leu Asp Leu Ser
695             700             705             710

agc aat aag ctc gat ggg agg att cct cag gct atg tca gct ctt act       2274
Ser Asn Lys Leu Asp Gly Arg Ile Pro Gln Ala Met Ser Ala Leu Thr
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atg ctt acg gaa atc gat ttg tcg aat aat aat ttg tct ggt ccg att       2322
Met Leu Thr Glu Ile Asp Leu Ser Asn Asn Asn Leu Ser Gly Pro Ile
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775             780             785             790

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Ser Leu Ala Gly Ser Val Ala Met Gly Leu Leu Phe Ser Phe Val Cys
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ata ttt ggg ctg atc ctt gtt ggt aga gag atg agg aag aga cgg aga   2562
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gaa gcc ttg agt atc aat ctt gct gct ttc gag aag cca ttg cgg aag   2706
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Leu Thr Phe Ala Asp Leu Leu Gln Ala Thr Asn Gly Phe His Asn Asp
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agt ctg att ggt tct ggt ggg ttt gga gat gtt tac aaa gcg att ttg   2802
Ser Leu Ile Gly Ser Gly Gly Phe Gly Asp Val Tyr Lys Ala Ile Leu
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Lys Asp Gly Ser Ala Val Ala Ile Lys Lys Leu Ile His Val Ser Gly
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caa ggt gat aga gag ttc atg gcg gag atg gaa acc att ggg aag atc   2898
Gln Gly Asp Arg Glu Phe Met Ala Glu Met Glu Thr Ile Gly Lys Ile
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aaa cat cga aat ctt gtg cct ctt ctt ggt tat tgc aaa gtt gga gac   2946
Lys His Arg Asn Leu Val Pro Leu Leu Gly Tyr Cys Lys Val Gly Asp
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gag cgg ctt ctt gtt aat gag gtt atg aag tat gga agt tta gaa gat   2994
Glu Arg Leu Leu Val Asn Glu Val Met Lys Tyr Gly Ser Leu Glu Asp
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cac aac tgc agt ccg cat atc atc cac aga gac atg aaa tcc agt aat   3138
His Asn Cys Ser Pro His Ile Ile His Arg Asp Met Lys Ser Ser Asn
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Ala Arg Leu Met Ser Ala Met Asp Thr His Leu Ser Val Ser Thr Leu
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Cys Ser Thr Lys Gly Asp Val Tyr Ser Tyr Gly Val Val Leu Leu Glu
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Leu Leu Thr Gly Lys Arg Pro Thr Asp Ser Pro Asp Phe Gly Asp Asn
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aac ctt gtt gga tgg gtg aaa cag cac gca aaa ctg cgg att agc gat   3426
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gtg ttt gac ccg gag ctt atg aag gaa gat cca gca tta gag atc gaa   3474
Val Phe Asp Pro Glu Leu Met Lys Glu Asp Pro Ala Leu Glu Ile Glu
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tgg aga cga ccg aca atg gta caa gtc atg gcc atg ttt aag gag ata   3570
Trp Arg Arg Pro Thr Met Val Gln Val Met Ala Met Phe Lys Glu Ile
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caa gcc ggg tca ggg ata gat tca cag tca acg atc aga tca ata gag   3618
Gln Ala Gly Ser Gly Ile Asp Ser Gln Ser Thr Ile Arg Ser Ile Glu
         1160               1165               1170

gat gga ggg ttc agt aca ata gag atg gtt gat atg agt ata aaa gaa   3666
Asp Gly Gly Phe Ser Thr Ile Glu Met Val Asp Met Ser Ile Lys Glu
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                1195

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Lys Asn Leu Leu Pro Asp Trp Ser Ser Asn Lys Asn Pro Cys Thr Phe
    50   55   60
Asp Gly Val Thr Cys Arg Asp Asp Lys Val Thr Ser Ile Asp Leu Ser
65   70   75   80
Ser Lys Pro Leu Asn Val Gly Phe Ser Ala Val Ser Ser Ser Leu Leu
                85   90   95
Ser Leu Thr Gly Leu Glu Ser Leu Phe Leu Ser Asn Ser His Ile Asn
            100   105   110
Gly Ser Val Ser Gly Phe Lys Cys Ser Ala Ser Leu Thr Ser Leu Asp
            115   120   125
Leu Ser Arg Asn Ser Leu Ser Gly Pro Val Thr Thr Leu Thr Ser Leu
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Gly Ser Cys Ser Gly Leu Lys Phe Leu Asn Val Ser Ser Asn Thr Leu
145   150   155   160
Asp Phe Pro Gly Lys Val Ser Gly Gly Leu Lys Leu Asn Ser Leu Glu
                165   170   175
Val Leu Asp Leu Ser Ala Asn Ser Ile Ser Gly Ala Asn Val Val Gly
            180   185   190
Trp Val Leu Ser Asp Gly Cys Gly Glu Leu Lys His Leu Ala Ile Ser
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Gly Asn Lys Ile Ser Gly Asp Val Asp Val Ser Arg Cys Val Asn Leu
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Glu Phe Leu Asp Val Ser Ser Asn Asn Phe Ser Thr Gly Ile Pro Phe
225   230   235   240
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Leu Ser Gly Asp Phe Ser Arg Ala Ile Ser Thr Cys Thr Glu Leu Lys
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Gly Ser Cys Ser Leu Leu Glu Ser Leu Ala Leu Ser Ser Asn Asn Phe
                340                 345                 350
Ser Gly Glu Leu Pro Met Asp Thr Leu Leu Lys Met Arg Gly Leu Lys
            355                 360                 365
Val Leu Asp Leu Ser Phe Asn Glu Phe Ser Gly Glu Leu Pro Glu Ser
    370                 375                 380
Leu Thr Asn Leu Ser Ala Ser Leu Leu Thr Leu Asp Leu Ser Ser Asn
385                 390                 395                 400
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                405                 410                 415
Thr Leu Gln Glu Leu Tyr Leu Gln Asn Asn Gly Phe Thr Gly Lys Ile
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Pro Pro Thr Leu Ser Asn Cys Ser Glu Leu Val Ser Leu His Leu Ser
            435                 440                 445
Phe Asn Tyr Leu Ser Gly Thr Ile Pro Ser Ser Leu Gly Ser Leu Ser
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Lys Leu Arg Asp Leu Lys Leu Trp Leu Asn Met Leu Glu Gly Glu Ile
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Pro Gln Glu Leu Met Tyr Val Lys Thr Leu Glu Thr Leu Ile Leu Asp
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545                 550                 555                 560
Ser Leu Ile Trp Leu Asp Leu Asn Thr Asn Leu Phe Asn Gly Thr Ile
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Pro Ala Ala Met Phe Lys Gln Ser Gly Lys Ile Ala Ala Asn Phe Ile
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Ala Gly Lys Arg Tyr Val Tyr Ile Lys Asn Asp Gly Met Lys Lys Glu
            595                 600                 605
Cys His Gly Ala Gly Asn Leu Leu Glu Phe Gln Gly Ile Arg Ser Glu
            610                 615                 620
Gln Leu Asn Arg Leu Ser Thr Arg Asn Pro Cys Asn Ile Thr Ser Arg
625                 630                 635                 640
Val Tyr Gly Gly His Thr Ser Pro Thr Phe Asp Asn Asn Gly Ser Met
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Met Phe Leu Asp Met Ser Tyr Asn Met Leu Ser Gly Tyr Ile Pro Lys
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Glu Ile Gly Ser Met Pro Tyr Leu Phe Ile Leu Asn Leu Gly His Asn
            675                 680                 685
Asp Ile Ser Gly Ser Ile Pro Asp Glu Val Gly Asp Leu Arg Gly Leu
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Asn Ile Leu Asp Leu Ser Ser Asn Lys Leu Asp Gly Arg Ile Pro Gln
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Ala Met Ser Ala Leu Thr Met Leu Thr Glu Ile Asp Leu Ser Asn Asn
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Arg Cys Asp Pro Ser Asn Ala Asp Gly Tyr Ala His His Gln Arg Ser
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His Gly Arg Arg Pro Ala Ser Leu Ala Gly Ser Val Ala Met Gly Leu
785   790   795   800

Leu Phe Ser Phe Val Cys Ile Phe Gly Leu Ile Leu Val Gly Arg Glu
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Met Arg Lys Arg Arg Arg Lys Lys Glu Ala Glu Leu Glu Met Tyr Ala
        820   825   830

Glu Gly His Gly Asn Ser Gly Asp Arg Thr Ala Asn Asn Thr Asn Trp
        835   840   845

Lys Leu Thr Gly Val Lys Glu Ala Leu Ser Ile Asn Leu Ala Ala Phe
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Glu Lys Pro Leu Arg Lys Leu Thr Phe Ala Asp Leu Leu Gln Ala Thr
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Asn Gly Phe His Asn Asp Ser Leu Ile Gly Ser Gly Gly Phe Gly Asp
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Val Tyr Lys Ala Ile Leu Lys Asp Gly Ser Ala Val Ala Ile Lys Lys
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Leu Ile His Val Ser Gly Gln Gly Asp Arg Glu Phe Met Ala Glu Met
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Glu Thr Ile Gly Lys Ile Lys His Arg Asn Leu Val Pro Leu Leu Gly
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Tyr Cys Lys Val Gly Asp Glu Arg Leu Leu Val Asn Glu Val Met Lys
945   950   955   960

Tyr Gly Ser Leu Glu Asp Val Leu Gln Asp Pro Lys Lys Gly Gly Val
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Lys Leu Lys Leu Ser Thr Arg Arg Lys Ile Ala Ile Gly Ser Ala Arg
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Gly Leu Ala Phe Leu His His Asn Cys Ser Pro His Ile Ile His Arg
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Asp Met Lys Ser Ser Asn Val Leu Leu Asp Glu Asn Leu Glu Ala Arg
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Val Ser Asp Phe Gly Met Ala Arg Leu Met Ser Ala Met Asp Thr His
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Leu Ser Val Ser Thr Leu Ala Gly Thr Pro Gly Tyr Val Pro Pro Glu
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Tyr Tyr Gln Ser Phe Arg Cys Ser Thr Lys Gly Asp Val Tyr Ser Tyr
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Gly Val Val Leu Leu Glu Leu Leu Thr Gly Lys Arg Pro Thr Asp Ser
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Pro Asp Phe Gly Asp Asn Asn Leu Val Gly Trp Val Lys Gln His Ala
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Lys Leu Arg Ile Ser Asp Val Phe Asp Pro Glu Leu Met Lys Glu Asp
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Pro Ala Leu Glu Ile Glu Leu Leu Gln His Leu Lys Val Ala Val Ala
                1125   1130   1135

Cys Leu Asp Asp Arg Ala Trp Arg Arg Pro Thr Met Val Gln Val Met
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Ala Met Phe Lys Glu Ile Gln Ala Gly Ser Gly Ile Asp Ser Gln Ser
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Thr Ile Arg Ser Ile Glu Asp Gly Gly Phe Ser Thr Ile Glu Met Val

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SEQUENCE LISTING

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      Jianming, Li
      Salk Institute for Biological Studies

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                                        Met Lys Thr Phe Ser Ser
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Phe Phe Leu Ser Val Thr Thr Leu Phe Phe Phe Ser Phe Phe Ser Leu
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Ser Phe Gln Ala Ser Pro Ser Gln Ser Leu Tyr Arg Glu Ile His Gln
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Leu Ile Ser Phe Lys Asp Val Leu Pro Asp Lys Asn Leu Leu Pro Asp
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Trp Ser Ser Asn Lys Asn Pro Cys Thr Phe Asp Gly Val Thr Cys Arg
55   60   65   70

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Asp Asp Lys Val Thr Ser Ile Asp Leu Ser Ser Lys Pro Leu Asn Val
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Gly Phe Ser Ala Val Ser Ser Ser Leu Leu Ser Leu Thr Gly Leu Glu
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